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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/878,144 | 06/08/2001 | Shlomo Maraglit | 11175.22.1 | 1309 |

7590 03/22/2004
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EXAMINER

CHAN, ALEX H

| ART UNIT | PAPER NUMBER |
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2633

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,144

Applicant(s)

MARAGLIT ET AL.

Examiner

Alex H Chan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Preliminary amendment filed on December 9th, 2002 is herein acknowledged.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, MEMS mirror adjuster in **claim 1**, the comparator as claimed in **claim 2**, means for producing an error signal and means for adjusting in **claim 14**, and producing an error signal and directing the reference light beam in **claim 18** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. **Claims 1, 2, 14 and 18** are objected to because of the following informalities: Adjuster in claim 1, comparator in claim 2, means for producing an error signal and adjusting means in claim 14, and producing an error signal and directing reference beam in claim 18 are not illustrated in the drawing nor described in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 1, 2-13, 14-17 and 18-20** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 1, applicants recite a “MEMS mirror adjuster for adjusting said MEMS mirror to aim said reflected optical signal.” Though applicants describe a mechanism for coarse aiming (specification, page 13), such mechanism (e.g. the motor and the drive mechanism) is not described in a way to provide on artisan to practice, use or make the invention.

Regarding claims 2-13, applicants recite a limitation “a comparator for generating an error signal indicative of a spatial relationship of the incident point on said detector.” Though applicants mentions that the electrical signal outputted from the detector 72 indicates the direction and magnitude of the error and the servo system 60 will then adjust the MEMS mirror correctly (Specification, page 19), applicants have not provided sufficient teaching so as to demonstrate how the claimed comparator or its analogous equivalent, if ever disclosed, generates

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an error signal so that a control system can respond to such error signal to nullify said error signal so as to enable one ordinary skilled in the art to practice, use or make the invention. Also, applicants fail to describe how the error signal is transmitted or utilized to and by the control system so as to nullify said error signal for an artisan to carry out such invention.

Regarding claims 14-17, applicants recite “a means for producing an error signal” and “a means for adjusting directing means in response to said error signal.” Applicants have not provided sufficient teachings in the specification for describing how and which component produces such error signal as well as how and via what means the error signal is transmitted so that the means for adjusting can respond to such adjustment so that one ordinary skilled in the art can practice, use or make this invention.

Regarding claims 18-20, applicants recite “producing an error signal” and “directing the reference light beam in response to said error signal.” However, applicants have not provided sufficient teachings on how such error signal is produced, transmitted and directed to the component which uses it to direct the reference beam in response to such error signal so as to enable one artisan to which it pertains to practice, use or make this invention.

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6. **Claims 1, 2-13, 14-17 and 18-20** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, applicants recite a "MEMS mirror adjuster for adjusting said MEMS mirror to aim said reflected optical signal." However, such terminology and limitation are not supported by the specification as originally filed.

Regarding claims 2-13, applicants recite a limitation "a comparator for generating an error signal indicative of a spatial relationship of the incident point on said detector." However, such terminology and limitation are not supported by the specification as originally filed.

Regarding claims 14-17, applicants recite "a means for producing an error signal" and "a means for adjusting directing means in response to said error signal." However, such terminology and limitation are not supported by the specification as originally filed.

Regarding claims 18-20, applicants recite “producing an error signal.” However, such terminology and limitation are not supported by the specification as originally filed.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claims 1, 2-13, 14-17 and 18-20** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, applicants fail to distinctly point out which component constitutes as the MEMS mirror adjuster for adjusting said MEMS mirror and how “adjusting the MEMS mirror” is carried out.

Regarding claims 2-13, applicants have not distinctly pointed out which component constitutes as the comparator as claimed. Also, the specification fails to describe how and by what means the control system responds to such error signal so as to nullify it. Though applicants claim that the control system adjusts the MEMS mirror correctly (specification, page 19), applicants have not distinctly claimed how such control is carried out (e.g. how the error signal is produced, transmitted and used by the control system and via what means the MEMS mirror is

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controlled via incorporating this error signal). The applicants further recite a limitation “on said detector to the target of said detector” in claim 2 and the very same means “on said detector to a target on said detector” in claims 14 and 18. It is not clear as to which target of detector or on the detector applicants are referring.

Regarding claims 14-17 and 18-20, applicants recite “a means for producing an error signal indicative of a spatial relationship of the incident point on said detector to a target on said detector.” Though applicants describes that the electrical signal outputted from the detector 72 indicates the direction and magnitude of the error (specification, page 18), applicants fails to describe any “means for producing” such error signal. It is notoriously known in the art that the optical detector is used for receiving and detecting the characteristics of the optical signal such as power and it does not produce any error signal. Therefore, applicants fail to distinctly point out, if any, means for producing error signal. Also, in **claim 14**, applicants recite the limitation “a means for adjusting said directing means in response to said error signal.” It is not clear how the means for adjusting said directing means response to said error signal. In fact, applicants have not pointed out what constitutes as “the means for adjusting” and how and via what means “the means for adjusting” responds to such error signal. In **claim 18**, applicants recite “directing the reference light beam in response to said error signal to nullify said error signal.” It is not clear how the error signal is responded and which component constitutes the directing means and how “directing the reference light beam” is taken place in response to such signal.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claim 1** is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,577,421 B1 to Cheng et al (hereinafter Cheng).

Regarding claim 1, Cheng discloses an atmospheric optical transmitter (Fig. 1) comprising: an optical transmitter (70 and 72) for transmitting an optical signal; an optical fiber (68) for carrying said optical signal from a source to said optical transmitter; a MEMS mirror (74 and 76 or 48 and 50) for reflecting said optical signal transmitted by said transmitter; and a MEMS mirror adjuster (52 and 84) for adjusting said MEMS mirror to aim said reflected optical signal (e.g. Col. 6, lines 28-49 and Col. 7, lines 15-40).

Regarding claims 14, 16, 18 and 20, Cheng discloses a system comprising a means for directing (e.g. via 56, 80, 50 and 76) a reference light beam to an incident point on a detector (e.g. 58, 82 and 42), and for directing a communications light beam (e.g. via 56) toward an end of an optical fiber (e.g. 60 and 62) wherein the reference light beam has a predetermined spatial relationship with the communications light beam (e.g. alignment information, transmission errors and noise correction, Col. 13, lines 12-30); a means for producing an error signal (via 64, 58 and

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82) indicative of a spatial relationship of the incident point on said detector to a target on said detector (Col. 7, lines 4-14, lines 46-51, Col. 8, lines 39-59); and a means for adjusting (via 52 and 84) said directing said directing means in response to said error signal to mollify said error signal (e.g. Col. 6, lines 33-49, Col. 7, line 50-Col. 8, line 44 and Col. 10, lines 1-17) to direct the communications light beam to a predetermined point on said end of said optical fiber.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claims 15 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of U.S. Patent No. 6,181,474 B1 to Ouderkirk et al (hereinafter Ouderkirk) or U.S. Patent No. 5,848,211 to Yang et al (hereinafter Yang).

Regarding claims 15 and 19, Cheng does not disclose wherein the communications light beam is a first communications light beam and the reference light beam is a first reference light beam, said system further comprising: a means for directing a second communications light beam from said end of said optical fiber; and a means for generating a second reference light beam substantially parallel to the second communications light beam. Ouderkirk discloses wherein the communications light beam is a first communications light beam (e.g. light beam transmitted from 7 to 16 of Fig. 8) and the reference light beam is a first reference light beam

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(e.g. light beam from 7 to 4 and 6 of Fig. 8), said system further comprising: a means for directing a second communications light beam from said end of said optical fiber (e.g. light beam from 16 to 7 of Fig. 8); and a means for generating (via 6 of Fig. 8) a second reference light beam (e.g. light beam from 6 to 4 and 7 of Fig. 8) substantially parallel to the second communications light beam (e.g. Col. 12, line 66-Col. 13, line 52). Likewise, Yang discloses wherein the communications light beam is a first communications light beam (e.g. light beam from 36 to 40 of Fig. 4) and the reference light beam is a first reference light beam (e.g. light beam from 34 to 32), said system further comprising: a means for directing (via 34 and 36 of Fig. 4) a second communications light beam (e.g. from 40 to 36 of Fig. 4) from said end of said optical fiber; and a means for generating (via 39 of Fig. 4) a second reference light beam (e.g. light beam from 39 to 36 of Fig. 4) substantially parallel to the second communications light beam. Accordingly, one of the ordinary skilled in the art would have been motivated to employ the above means to provide the ease of alignment where the methods and tools for aligning an optical fiber to an output lens are readily available on the commercial market (Col. 4, lines 29-40, Ouderkirk) or reduce time consumed for alignment and adjustment during assembling the photonics modules (Col. 2, lines 18-47, Yang). Therefore, it would have been obvious to one of artisan from the same endeavor at the time the invention was made to modify the alignment system of Cheng to incorporate the above means so as to provide ease of alignment as suggested by Ouderkirk or reduce time for alignment and adjustment for assembling photonic modules as taught by Yang.

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Regarding claim 16, Ouderkirk or Yang discloses wherein said mirror is a MEMS mirror having a diameter in the range of 1 mm to 3 mm (Col. 4, lines 41-49, Ouderkirk or Col. 4, lines 33-39, Yang).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Frey et al (Fig. 1 and 3), DeBaryshe et al (Fig. 10E) and Sakanaka (Fig. 6) are cited to show related art in controlling mirror within optical free space communication.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex H Chan whose telephone number is (703) 305-0340. The examiner can normally be reached on Monday to Friday (8am to 6pm EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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March 16th, 2004



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